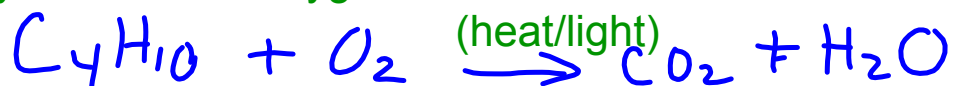


Types of Chemical Equations

1. Combustion - rapid reaction with oxygen

hydrocarbon + oxygen \rightarrow water + carbon dioxide + energy



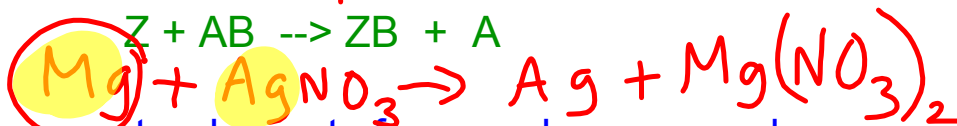
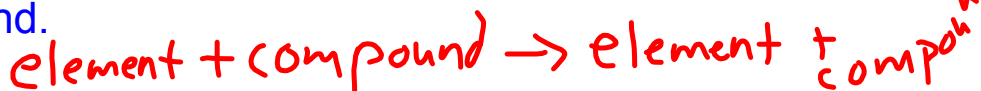
2. Synthesis - combine two small molecules (or elements) to make one larger molecule.



3. Decomposition - splitting one large molecule into 2 or more smaller molecules or elements.

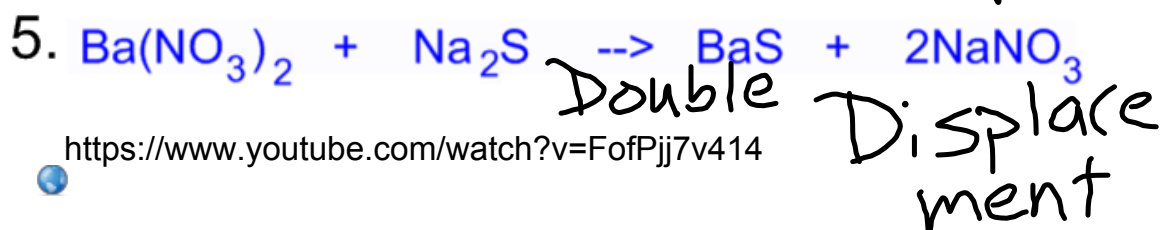
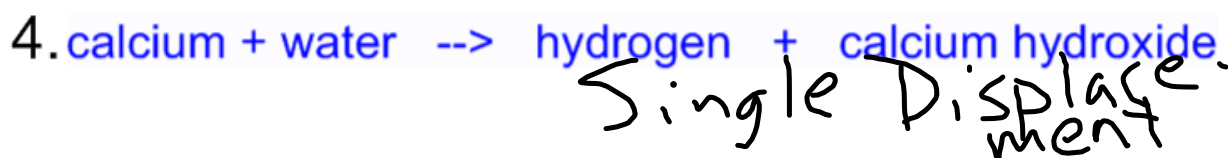
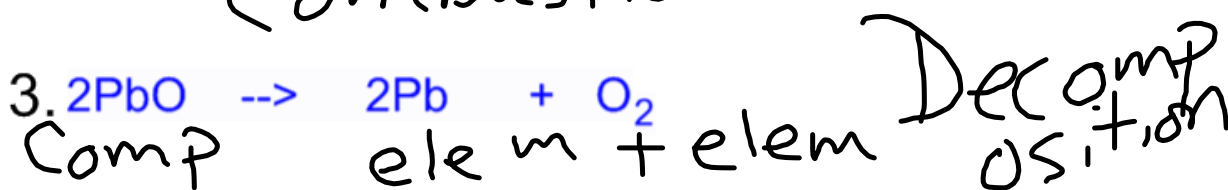


4. Single Displacement - one element replaces another element from a compound.



5. Double Displacement - elements from each compound are exchanged (replaced).





<https://www.youtube.com/watch?v=FofPjj7v414>



The ~~Particle Theory of Matter~~ states that:

1. All matter is made up of tiny particles.
2. The particles are always moving.

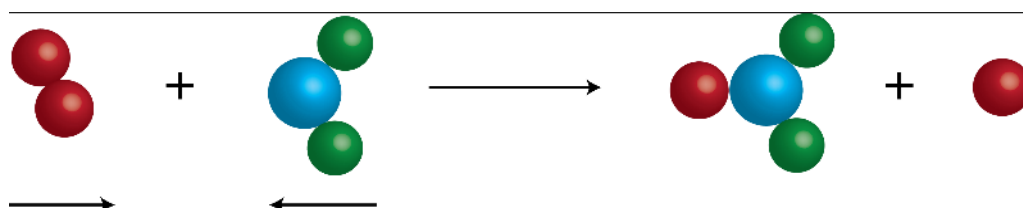
(The higher the temperature, the faster they move.)

Reaction Rates

Collision Theory explains why chemical reactions occur.

Particles are always moving so sometimes they will collide. If these collisions occur with enough force, old chemical bonds will break and new ones will form.

<https://www.youtube.com/watch?v=Ytoh8MNwXhc>



Controlling Chemical Reactions

The rate of a chemical reaction will increase if:

1. The number of collisions increases.
2. The energy of the collisions increases.

Four factors that control the energy and number of collisions are

→ 1. Temperature

As temperature increases, particles move faster. Collisions have higher energy and occur more often.

Ex: food spoils faster outside of the fridge

2. Concentration: The more particles there are, the more likely they are to collide.

3. Surface area: A greater surface area makes it easier for particles to collide. *Smaller particles react faster.... like saw dust*

4. Catalyst: This is a substance that is not part of the reaction, but lowers the amount of energy required to break a bond.